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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/696,560	10/30/2003	Eric R. Fossum	M4065.0629/P629	5907
24998	7590	12/15/2006	EXAMINER	
DICKSTEIN SHAPIRO LLP 1825 EYE STREET NW Washington, DC 20006-5403			PYO, KEVIN K	
			ART UNIT	PAPER NUMBER
			2878	

DATE MAILED: 12/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/696,560

Applicant(s)

FOSSUM, ERIC R.

Examiner

Kevin Pyo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 6, 9, 17-19, 22, 25, 33-35, 38, 41 and 49-52 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6, 9, 17-19, 22, 25, 33-35, 38, 41 and 49-52 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 4/30/2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Claim Rejections - 35 USC § 112

1. Claims 6, 9, 22, 25, 38 and 41 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 6, 9, 22, 25, 38 and 41, each of these claims depends on a respective canceled claim. Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3, 6, 9, 17-19, 22, 25, 33-35, 38, 41 and 49-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Merrill (the publication entitled "Intra-Pixel Reset Noise Cancellation; published in 2001) in view of Merrill (6,940,551).

Regarding claims 1, 17 and 33, Merrill (2001) shows in Fig.1 the following elements of applicant's invention: a pixel comprises a reset portion (reset1, reset2) for resetting a photosensitive element of said pixel, a first storage circuit (C1) for storing a reset voltage level of said photosensitive element and a second storage circuit (C2) for storing a voltage level of said photosensitive element after an integration period. Merrill (2001) shows in Fig.1 a first sample and hold circuit (applicant's specification paragraphs 17 and 18) comprising the recited first sample and hold transistor (N2) and the recited storage capacitor (C1). Merrill (2001) shows in

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Fig.1 a second sample and hold circuit (applicant's specification paragraphs 17 and 18) comprising the recited first sample and hold transistor (N6) and the recited storage capacitor (C2). While Merrill (2001) does not explicitly describe the intra-pixel reset noise cancellation circuit of Fig.1 as embodied in a plurality of pixels, Merrill (551) shows a pixel containing a reset noise cancellation circuit (Fig.3) similar to his prior disclosure and explicitly describes the pixel as repeated in an array of arbitrary size (Fig.8, col.6, lines 37-42). Since a CMOS image sensor of the type described by Merrill (2001) (page 153) normally comprises a plurality of pixels, and as described by Merrill (551) a reset noise cancellation circuit in every pixel is useful, it would have been obvious to one of ordinary skill in the art at the time the invention was made to specify that the "intra-pixel" circuit described in Fig.1 of Merrill (2001) was repeated in the other pixels of the CMOS image sensor.

Regarding claims 2, 18 and 34, Merrill (2001) shows in Fig.1 a photodiode.

Regarding claims 3, 19 and 35, the device of Merrill (2001) in view of Merrill (551) discloses a column output line.

Regarding claims 6, 22 and 38, as far as the claim is understood, Merrill (2001) shows in Fig.1 a first terminal of a first storage capacitor (C1) is coupled to a gate of a first source follower transistor (N3), a first source/drain terminal of the first source follower transistor is coupled to a supply voltage terminal (V+) and a second source/drain terminal of the first source follower transistor is switchably coupled to the column bus with a row select transistor (N8).

Regarding claims 9, 25 and 41, as far as the claim is understood, Merrill (2001) shows in Fig.1 a first terminal of a second storage capacitor (C2) is coupled to a gate of a second source follower transistor (N7), a first source/drain terminal of the second source follower transistor is

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coupled to a supply voltage terminal (V+) and a second source/drain terminal of the second source follower transistor is switchably coupled to the column bus with a row select transistor (N8).

Regarding claims 49-52, the method steps recited therein are inherently disclosed by the device of Merrill (2001) in view of Merrill (551).

3. Applicant's arguments filed on 10/12/2006 have been fully considered but they are not persuasive.

The main point of applicant's argument is that the Merrill Article (2001) does not disclose a reset portion and a first and second storage circuit each comprising a sample and hold transistor. However, the Examiner disagrees with this argument. The Merrill Article (2001) clearly discloses, as stated above in the rejection, the applicant's broadly claimed limitation. More specifically, the Merrill Article (2001) discloses in page 153 (under the subsection "Principle of Operation") the recited first and second sample and hold transistors (N2 and N6). In addition, the applicant's specification stated in paragraph [0018] that reset noise cancellation circuitry of Merrill Article (2001), which would perform correlated double sampling (CDS), is located within each individual pixel, rather than on a column line. The Examiner does not refute that the device of the Merrill Article (2001) consumes an excessive amount of power within a pixel in performing CDS. However, the Examiner does disagree with the indication that because of this disadvantage, the claimed invention would be patentable over the Merrill Article (2001). The Merrill Article (2001) discloses what has been claimed as explained in the rejection. It should be noted that a recitation with respect to the manner in which a claimed apparatus is

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intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Pyo whose telephone number is (571) 272-2445. The examiner can normally be reached on Mon-Fri (with flexible hour), First Mon. off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Y. Epps can be reached on (571) 272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Kevin Pyo
Primary Examiner
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Pkk
12/4/06